teamplay &

The Siemens Healthineers Digital Ecosystem

Dr. Thomas Friese
March 2018
Digitalization has transformed diagnostic imaging
40+ years of innovation

Data courtesy of Israelitishes Krankenhaus, Hamburg, Germany
Cinematic Rendering: Research use only. Not for clinical use
Why digital technology drives healthcare towards a “super-convergence”

Acceleration of Digital Technology

Wireless sensors & devices
Mobile connectivity
Social networking
Genomics
Internet
Imaging
Data universe
Health info systems


Results

Prevention
Prediction
Management
Diagnosis

Disease

Eric Topol: The creative destruction of medicine
Digitalization is key to the transformation to value based care

Data aggregation
Information without silos

Connect everything
Knowledge beyond reach

Predictive Analytics
Connecting the dots

Outcomes

Costs

Digitalization is key to the transformation to value based care
Addressing every step in the transformation journey to healthcare digitalization

Generate

Capture the transformational value of your lab and imaging diagnostics data

Aggregate

Enhance the value of your data by increasing interoperability and connecting with more stakeholders

Analyze

Leverage AI to cultivate big data and gain relevant, accurate and timely insights

Operationalize

Realize value-based decision making by addressing end user needs and gaining stakeholder advocacy

Data security, privacy, & governance

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1) Images depict the text version Atellica™ PM 1.0 Software. Under development. Not available for sale. Product availability varies by country.
Digitalization at work – we already started to build a cloud based global network of digital services

1 teamplay is not commercially available in all countries. If the service is not marketed in countries due to regulatory or other reasons, the service offering cannot be guaranteed. Please contact your local Siemens organization for further details.
Increase your efficiency with teamplay by following the improvement cycle

1. **Analyze**
   - Easily identify dose outliers or find out how efficient you are.

2. **Understand**
   - See what causes this issue, explore potential levers and compare with peers.

3. **Optimize**
   - Edit, improve and implement the detected criteria.

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3 teamplay Protocols supports selected Siemens scanners. Please contact your Siemens representative for more details.
teamplay comes with different data privacy levels to support compliance with local regulations.

- **teamplay**\(^1\) has been awarded with the European Privacy Seal and the German "Seal of Privacy for IT products" of the Independent Centre for Privacy Protection in Schleswig-Holstein (ULD).

- Users can be sure that processing of patient data is in line with German and EU data protection law and teamplay supports the US requirements of HIPAA.\(^2\)

\(^1\) teamplay CORE applications: teamplay Dose, teamplay Usage and teamplay Protocols

\(^2\) Supporting HIPAA (Health Insurance Portability and Accountability Act) compliance.
Distribution

<table>
<thead>
<tr>
<th>Scanners</th>
<th>Body Regions</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>88</td>
</tr>
</tbody>
</table>

Exams in total | Exams per hour | Exam duration | Exam duration median

Benchmark | Contrast agent | Sort by all Exams | Export graph

- **SIEMENS-Symbia-2**: 72.46 min
- **SIEMENS-Aera-1**: 60.04 min
- **SIEMENS-AXIS-1**: 50.52 min
- **SIEMENS-Biograph-2**: 39.23 min
- **SIEMENS-FLC-10**: 38.58 min
- **SIEMENS-Espree-2**: 31.13 min
- **SIEMENS-Biograph-1**: 30.61 min
- **GE-Discovery-2**: 28.46 min
- **MAGNETOM Skyrace - Radiology**: 26.09 min
- **MAGNETOM Skyra**: 25.69 min
- **MAGNETOM Skyra - Radiology**: 25.69 min

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12
Thomas Friese| HC SV DS TP
We already started building a global cloud-based network with >1900 institutions connected

> 11,000
Active systems

> 11,000,000
Dose Studies
(since March ’16)

> 1900
Institutions

> 33,000,000
Usage Studies
(since March ’16)

Manufacturers
Siemens, Philips, GE, Hologic, Carestream, Agfa, Samsung, Toshiba, Kodak, Fuji, Varian, Canon, Konica Minolta

Data acquired for Active systems, # of studies and manufacturers: 13.03.2017 Timeframe: Cumulated numbers since March 2016 Source: teamplay Operations Logging

1 Prerequisites include: connection to a network, meeting recommended minimum hardware or browser requirements, and adherence to local data security regulations.

2 Modalities change identity based on scan-mode, product heuristics apply to consolidate IDs, current heuristics may over-estimate by ~10%

³ Dose studies typically overlap with Usage studies, there is a small number of dose report only studies (not counted in Usage studies)
Consulting-Example: Asset planning
CT Utilization Data Overview (1/2) SENSATION 64

Customer Profile / Comparison

<table>
<thead>
<tr>
<th>Customer data</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>xxx</td>
<td></td>
</tr>
<tr>
<td>City</td>
<td>xxx</td>
<td></td>
</tr>
<tr>
<td>Serial Number</td>
<td>1234</td>
<td></td>
</tr>
<tr>
<td>Receiver Serial Number</td>
<td>123456789</td>
<td></td>
</tr>
</tbody>
</table>

Comparison Group

<table>
<thead>
<tr>
<th>World Top 10%</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>System Group</td>
<td>SENSATION 64</td>
<td>SENSATION 64</td>
</tr>
<tr>
<td>Institution Type</td>
<td>Imaging Center</td>
<td>Imaging Center</td>
</tr>
<tr>
<td>Year/Month</td>
<td>04.2016 .. 06.2016 (3)</td>
<td></td>
</tr>
</tbody>
</table>

Basic Utilization Data

<table>
<thead>
<tr>
<th></th>
<th>Core</th>
<th>Total</th>
<th>Comparison Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of working days p.m.</td>
<td>19,2</td>
<td>21,1</td>
<td>20,3</td>
</tr>
<tr>
<td>Number of working hours p.d.</td>
<td>8,3</td>
<td>7,2</td>
<td>9,0</td>
</tr>
<tr>
<td>Number of exams p.d.</td>
<td>70,3</td>
<td>53,0</td>
<td>50,0</td>
</tr>
<tr>
<td>Number of exams p.h.</td>
<td>9,5</td>
<td>7,6</td>
<td>5,6</td>
</tr>
<tr>
<td>Avg. exam duration in min.</td>
<td>6,7</td>
<td>8,6</td>
<td>5,2</td>
</tr>
<tr>
<td>Avg. patient change time in min.</td>
<td>5,4</td>
<td>8,2</td>
<td>4,0</td>
</tr>
<tr>
<td>Core time</td>
<td>7am - 7pm</td>
<td>12am - 12am</td>
<td>12am - 12am</td>
</tr>
</tbody>
</table>

Time

<table>
<thead>
<tr>
<th></th>
<th>Min. per Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam Duration (With Contrast)</td>
<td>29,9</td>
</tr>
<tr>
<td>Patient Change Time (With Contrast)</td>
<td>15,8</td>
</tr>
<tr>
<td>Exam Duration (Without Contrast)</td>
<td>6,7</td>
</tr>
<tr>
<td>Patient Change Time (Without Contrast)</td>
<td>3,2</td>
</tr>
</tbody>
</table>

Scan Volume

<table>
<thead>
<tr>
<th>Number per month</th>
<th>Patients</th>
<th>Exams with contrast</th>
<th>Exams without contrast</th>
</tr>
</thead>
<tbody>
<tr>
<td>May-17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jun-17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jul-17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aug-17</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Consulting-Example: Asset planning
CT Utilization Data Overview (2/2) SENSATION 64

Distribution by Day of Week

<table>
<thead>
<tr>
<th>Day</th>
<th>Exam Duration</th>
<th>Patient Change Time</th>
<th>Number of Exams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>9.9</td>
<td>15.2</td>
<td>11.4</td>
</tr>
<tr>
<td>Tuesday</td>
<td>9.1</td>
<td>10.7</td>
<td>7.7</td>
</tr>
<tr>
<td>Wednesday</td>
<td>9.3</td>
<td>8.9</td>
<td>14.2</td>
</tr>
<tr>
<td>Thursday</td>
<td>11.6</td>
<td>7.7</td>
<td></td>
</tr>
<tr>
<td>Friday</td>
<td>11.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Exams by Hour of Day

<table>
<thead>
<tr>
<th>Time</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:00 pm</td>
<td>9.9</td>
<td>9.1</td>
<td>15.2</td>
<td>11.6</td>
<td>11.4</td>
</tr>
<tr>
<td>1:00 pm</td>
<td>9.3</td>
<td>10.7</td>
<td>8.9</td>
<td>7.7</td>
<td>14.2</td>
</tr>
<tr>
<td>2:00 pm</td>
<td>15.2</td>
<td>10.7</td>
<td>8.9</td>
<td>7.7</td>
<td></td>
</tr>
<tr>
<td>3:00 pm</td>
<td>11.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:00 pm</td>
<td>11.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5:00 pm</td>
<td>11.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:00 pm</td>
<td>10.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7:00 pm</td>
<td>10.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8:00 pm</td>
<td>10.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:00 pm</td>
<td>10.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:00 pm</td>
<td>10.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Body Region Profile

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of Exams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast</td>
<td>66.0</td>
</tr>
<tr>
<td>Knee</td>
<td>23.0</td>
</tr>
<tr>
<td>Abdomen</td>
<td>21.0</td>
</tr>
<tr>
<td>Neck</td>
<td>10.0</td>
</tr>
<tr>
<td>Head Neck</td>
<td>9.0</td>
</tr>
<tr>
<td>Head</td>
<td>8.0</td>
</tr>
</tbody>
</table>

Comparison Group

<table>
<thead>
<tr>
<th>Exam Duration</th>
<th>Your System</th>
<th>Comparison Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min. per Exam</td>
<td>3.0</td>
<td>5.0</td>
</tr>
<tr>
<td></td>
<td>6.0</td>
<td>15.0</td>
</tr>
<tr>
<td></td>
<td>10.0</td>
<td>12.0</td>
</tr>
<tr>
<td></td>
<td>8.0</td>
<td>4.0</td>
</tr>
<tr>
<td></td>
<td>6.0</td>
<td>5.0</td>
</tr>
</tbody>
</table>

Exam Duration

- Min. per Exam
- Patient Change Time

Number of Exams

- Breast
- Knee
- Abdomen
- Neck
- Head Neck
- Head

Your System

- Number of Exams
- Exam Duration

Comparison Group

- Number of Exams
- Exam Duration

Consulting-Example: Asset planning
CT Utilization Data Overview (2/2) SENSATION 64

Distribution by Day of Week

Exams by Hour of Day

Body Region Profile

Comparison Group

- Exam Duration
- Number of Exams

Example
Siemens Healthineers Digital Ecosystem
Open and secured environment for digitalizing healthcare

Cloud platform: data aggregation and analytics of “secondary data”

Siemens Healthineers Apps + Partner Apps and Data

Devices

Provider Networks

Patient & Home Networks

Smart scanners

In vitro networks

Departmental & Enterprise IT

Patient & Referrer Portals

eHealth Solutions: personal health information exchange

The components mentioned in this illustration are not fully integrated into the Siemens Healthineers Digital Ecosystem yet and rather point out to future possibilities.
Siemens Healthineers Digital Ecosystem
A growing spectrum of digital offerings
Siemens Healthineers Digital Ecosystem
Architecture model view

The components mentioned in this illustration are not fully integrated into the Siemens Healthineers Digital Ecosystem yet and rather point out to future possibilities.
Shared capabilities for fast and easy access to actionable insights

- Purchase
- Deployment
- Support
- Interconnectivity
- Usability

Thomas Friese | HC SV DS TP
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What is it?

mediCAD is the web based orthopedic planning solution of mediCAD - the globally most successful and recognized orthopedic planning software on the market. Currently available for orthopedic preoperative hip and knee plannings and access to more than 500,000 templates from over 130 implant manufacturers. mediCAD helps ensure a high level of planning and operational quality and supports to determine, display, calculate, and document the most effective alternatives and reveal useful information before surgery. Clear benefits are Simple dimensioning - mediCAD provides an easy pre- and postoperative dimensioning of joint axes.
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